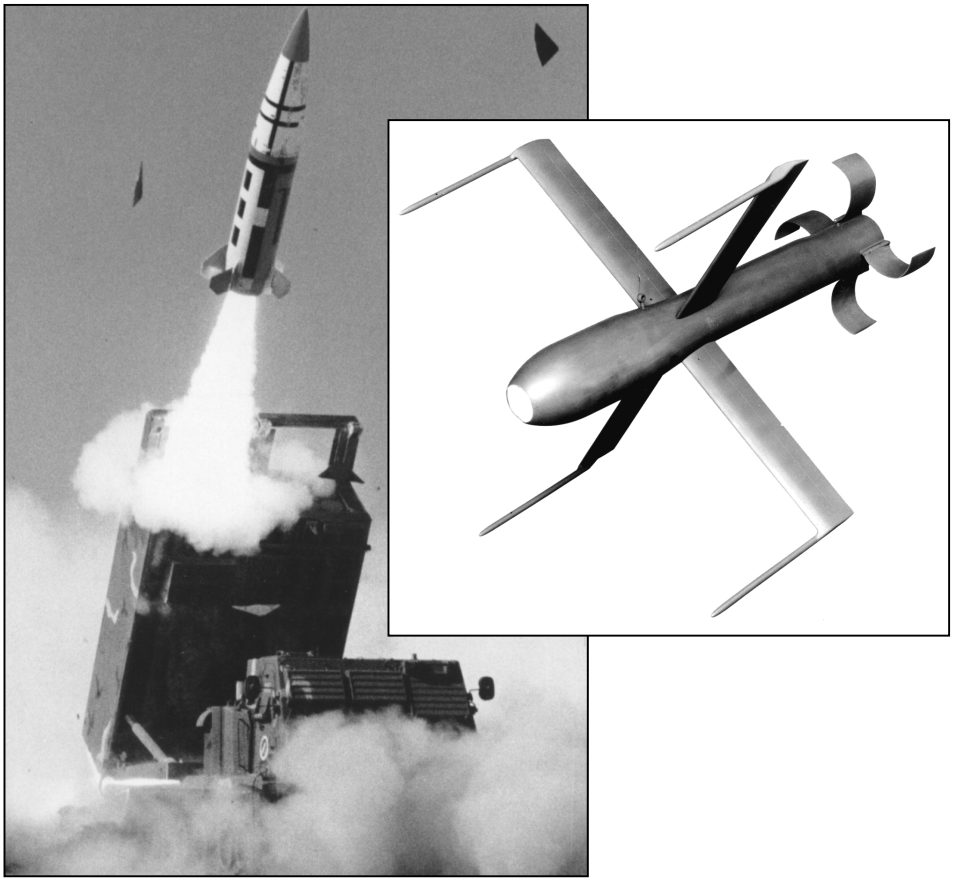
ARMY TACTICAL MISSILE SYSTEM
BLOCK II & IIA (BAT)



Army ACAT ID Program

Total Number of BATs:	19,554 (5,423 BAT + 14,131 BAT P3I)
Total Number of Missiles:	1,806 (1,206 Block II + 600 Block IIAs)
Total Program Cost (TY$):	$6245.4M
Average Unit Cost (TY$):	$2.667M Block II $1.718M Block IIA
Full-rate production:	3QFY94

Prime Contractor

Northrop Grumman Electronic Systems
Lockheed Martin Vought Systems

SYSTEM DESCRIPTION & CONTRIBUTION TO JOINT VISION 2010

The Army Tactical Missile System (ATACMS) Block II/Brilliant Anti-armor Technology (BAT) and ATACMS Block II/P3I BAT systems are ***precision engagement*** weapons that integrate standoff delivery accuracy with a submunition possessing the required capability to autonomously seek and kill

moving and stationary armor in the deep battle zone. This precision engagement capability is designed to enable joint U.S. and combined allied forces interdiction of enemy formations through synchronized operations from dispersed locations. This ability to engage deep targets will contribute to the joint effort that assures ***dominant maneuver***.

BAT is a self-guided submunition that uses on-board sensors to seek, identify, and engage enemy combat vehicles. The Army is developing two BAT variants. *Basic BAT* will engage moving armored vehicles using acoustic and infrared sensors. The acoustic sensor acquires and guides the submunition to the moving vehicles. Once in the vicinity of a threat vehicle, the infrared sensor guides the BAT to its aimpoint, where it uses a tandem-shaped warhead to destroy the vehicle. Thirteen BATs will be dispensed from the ATACMS Block II missile.

BAT P3I will be deployed from ATACMS Block II and ATACMS Block IIA. As with Basic BAT, BAT P3I will use acoustic sensors to acquire moving vehicles. It will also use a millimeter wave sensor to acquire stationary armored vehicles. Once acquired, the Block II/BAT P3I will use its millimeter wave and infrared sensors to guide itself to the intended target, where a new tandem warhead will destroy the vehicle. The Block II/BAT P3I will dispense 13 BAT P3Is.

ATACMS Block IIA/BAT P3I is designed to attack moving and stationary armor as well as transporter erector launchers and multiple rocket launchers. The additional target set will be added by incorporating new detection and track algorithms in BAT P3I software. BAT P3I in Block IIA is intended to have the same hardware design as BAT P3I in Block II. In addition, the warhead will have an alternate warhead initiation capability to possibly improve the capability of killing softer targets. Block IIA will dispense six BAT P3Is and have approximately twice the range as Block II.

BACKGROUND INFORMATION

Both ATACMS Block II and Basic BAT were approved to enter low-rate production in February 1999. Formal live fire testing of Basic BAT will be conducted from August-December 2000. ATACMS Block II/BAT will be operationally tested from May-November 2000, and enter full-rate production in April 2001.

BAT P3I began EMD in March 1999. A DAB decision to change production from Basic BAT to BAT P3I will be made in 3QFY02. Hard target live fire testing for BAT P3I is currently planned for 1QFY02, and soft target live fire testing is planned for 1-3QFY03. The ATACMS Block II/BAT P3I continued production decision will be made in 1QFY05 after OT&E.

ATACMS Block IIA will begin EMD in FY01.

TEST & EVALUATION ACTIVITY

Major test activity has occurred with the ATACMS Block II/BAT. Recent technical testing has focused on the missile firings of ATACMS Block II/BAT. There have been nine flight tests with 53 functional BATs against a moving array of real armored vehicles. Tests were against clean and countermeasured vehicles, with intentional aimpoint offsets replicating expected errors in target location. Two of the tests used full-up missiles with 13 functional BATs. All testing has been consistent with the DOT&E-approved TEMP. DOT&E and Army OTA representatives have observed all flight tests.

DOT&E is working with the Army to develop a robust test and evaluation strategy (both OT&E and LFT&E) for ATACMS Block II/BAT P3I, which will be included in a separate TEMP. A separate TEMP will then be prepared for ATACMS Block IIA.

TEST & EVALUATION ASSESSMENT

Testing indicates that the Block II missile is within accuracy requirements. The Block II missile has successfully dispensed 87 percent (102/117) of its BATs. However, in one of the full-up missile tests in July, nine of the 13 BATs were damaged at dispense. Analyses of the latest flight discovered a design flaw in the Sequencer Interface Unit switching logic. A fix has been identified and will be incorporated into future flight tests. There will be another DT full-up missile firing prior to the start of OT. OT entrance criteria for both the missile and BAT submunition have been established.

The BAT submunition is not currently meeting the ORD reliability threshold. Eighty percent (32/40) of the submunitions successfully dispensed from the missiles have been reliable. The Milestone III requirement is 91 percent. Corrections have been identified for most of the problems identified. These fixes will be incorporated prior to the operational test. It is likely that the submunition will not meet its reliability requirement during OT because a test-fix-test reliability growth program has not been implemented for the most recent firings. While fixes have been identified for failures seen to date, they have not been tested and may not correct all of the problems. In addition, a change in the location of the assembly line, prior to OT, may increase manufacturing problems. Sixteen BATs, which include the new fixes and new assembly line, will be tested prior to OT. Despite reliability problems, effectiveness test results and modeling indicate that Block II/BAT is capable of meeting nearly all of its effectiveness requirements at the 0.80 reliability.

Each test event, regardless of success or failure, has contributed to the overall modeling and simulation validation and accreditation methodology. Early developmental test data has been available to DOT&E and Army operational evaluators for independent simulation and early assessments.

The LFT&E strategy for the weapon system was developed to take advantage of expected hits on armored vehicles during the planned flight tests of submunitions with live warheads. There have been 15 BAT drops/dispenses with live warheads scored; five of these have hit targets (both tanks and light armored vehicles). There are sufficient flight tests with warheads and dedicated LFT&E events planned to adequately determine the lethality of the Basic BAT submunition against moving armored vehicles.

OPEVAL addresses the total system, including target acquisition, command and control (C2), and effects on target. Command and control will be evaluated in a separate ground operational test. At this time, there does not appear to be any major problems in testing C2; however, there are problems in testing the target acquisition portion. The Joint Surveillance Target Attack Radar System (JSTARS) is the major target acquisition platform for ATACMS/BAT. There are currently no JSTARS operational tests scheduled prior to the ATACMS Block II/BAT full-scale production decision; and the JSTARS/Common Ground Station's ability to support the ATACMS Block II/BAT mission has not been demonstrated. In October 1999, the Army conducted a technical demonstration to evaluate JSTARS' ability to acquire ATACMS Block II/BAT targets. DOT&E will receive the data from this demonstration in early 2000.

CONCLUSIONS, RECOMMENDATIONS, LESSONS LEARNED

The ATACMS Block II/BAT Program has incorporated early and continued OT&E involvement during DT and the attendant modeling and simulation plan. Each test event has significantly contributed to the body of knowledge regarding the ATACMS Block II missile and builds toward eventual OPTEC accreditation of the IOT&E simulation strategy. This early involvement, combined DT/OT strategy, and robust modeling and simulation have been key to the developer and operational testers evaluation strategies.